

A GUIDE TO ENVIRONMENTALLY PREFERABLE COMPUTER PURCHASING



Computers are as common in our offices as telephones. Faster, more powerful machines quickly replace each other, with “up-grade” cycles of two or three years. Most equipment is designed for disposal; it does not come apart easily, and parts cannot be upgraded separately. Units may not be recyclable if the materials are hard to separate. The result is large amounts of electronic junk, even with re-furbishers, recyclers and donations diverting some electronics from trash.

Besides wasting materials, the manufacturing and disposal processes may release pollutants to air and water and affect human health. The costs of frequent replacement, plus hazardous waste disposal for some items, can add up quickly. What looked like a good price to buy equipment may carry significant hidden costs.

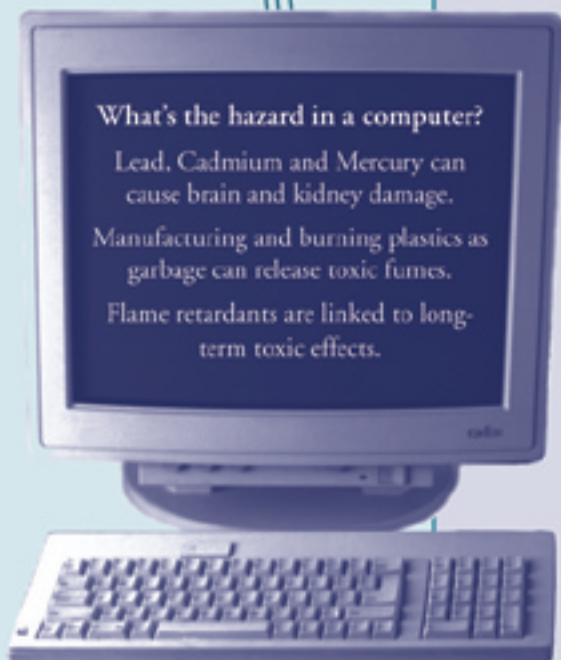
You can send a message to manufacturers and suppliers. Your purchasing decisions can affect the market. Choose manufacturers who practice Product Stewardship by making it their business to produce products that are less toxic, conserve natural resources, and reduce waste.

This Guide can help you make environmentally friendly choices when you purchase computer equipment. In it you'll find out

- what product features can damage the environment,
- what alternatives to seek,
- where to get details about products and contracts, and
- who's doing what among manufacturers, agencies and organizations.

What's the hazard in a computer?

Lead, Cadmium and Mercury can cause brain and kidney damage.
Manufacturing and burning plastics as garbage can release toxic fumes.
Flame retardants are linked to long-term toxic effects.



“Product Stewardship” means manufacturers and suppliers take responsibility for the environmental impacts and costs from the manufacture, use, and disposal of their products.

PROBLEMS AND ALTERNATIVES

From design to disposal, purchasing choices affect the environment. The lists below identify materials and processes to consider for their environmental impacts, and show how your purchasing specifications can reduce or eliminate those problems. Further on in this Guide, you'll find web addresses and resources for contract language, standards, and product details.

What's the most important part of "green purchasing"? It's taking steps to avoid pollution and waste. Energy efficient equipment cuts polluting emissions from power plants. Providing for equipment at the end of its useful life also prevents pollution and saves valuable resources. That's good business, too: the most efficient system has the least waste. If you want to read only one part of this Guide, look at "End-of-Life" Management below.

OBSOLESCENCE VS. "UPGRADABILITY"; END-OF-LIFE MANAGEMENT

What's the problem?

"Planned obsolescence" and design-for-disposal uses up natural resources and causes waste. Operating systems and software that cannot be upgraded electronically affect both the environment and the user's budget. Samsung announced "the ultimate throwaway computer", sealed so it cannot be upgraded.

What's the alternative?

- Lease and take-back options (purchaser buys computing "service" rather than a computer "product"). Dell and Gateway have substantial leasing programs. Dell, Hewlett-Packard and some others take back certain used equipment.
- Choose operating systems and software that are readily upgradable.
- Ask for readily upgradable hardware. Toshiba is developing a modular computer with a rewritable cartridge that can be upgraded electronically at low cost.
- Make sure spare parts and service will be available (defined in "years available after production.")
- Check to see that memory is easily expandable.
- Demand "spare tire" software and licensing can be pre-loaded to allow for simple reuse of hardware. (Spare tire software is 'inflated' when equipment is decommissioned. The original software related data are erased.

PACKAGING & SHIPPING

What's the problem?

Computer equipment comes packaged in materials that typically cannot be re-used, separated, or recycled. Glued computer parts and multiple-material packaging impede recycling. Materials such as polystyrene are generally made without recycled content and may be non-recyclable. Excessive packaging is wasteful. Paper manuals and disks packaged with each computer often add to the waste.

What's the alternative?

- Ask for several computer units to be packaged together for shipping (called "multi-paks") rather than boxed individually.
- Require recycled-content materials and recyclable packaging. Recyclers need to know material types, so require labeling (type of plastic, metal, etc.)
- Require manufacturers or shippers to take back packaging for reuse or recycling. City of Seattle and Boeing computer contracts do this.
- Ask for on-line manuals and pre-installed programs. City of Seattle requires this.
- Require that types and number of materials are minimized and content is labeled.





TOXIC MATERIALS

What's the Problem?

Manufacturing of computers and component parts typically involves solvents and other substances that must be controlled to reduce pollution and health risks. Cadmium, mercury, lead, and brominated or halogenated compounds do not break down readily in nature, and require special management. (Refer to the Silicon Valley Toxics Coalition's Clean Computer Campaign, www.svtc.org for more details about toxic substances related to computer equipment.

What's the alternative?

- Mandate low levels of toxic chemicals of concern. Massachusetts recently awarded points to bidders who, in manufacturing and assembly, avoided CFCs or HCFCs, chlorinated solvents, cadmium, mercury, and chlorinated or brominated flame retardants.
- Use non-halogenated flame retardants or equipment designed using self-extinguishing base.
- Require take-back provisions for all equipment.
- Use lead-free solder. Available from Matsushita and Sony.
- Explore glass-to-glass recycling to reuse leaded glass in cathode ray tubes (CRTs). Two companies, Envirocycle and Waste Management Asset Recovery, have facilities to do this.
- Use only low-mercury and long-life lamps in flat panel displays.
- Batteries should be removable, rechargeable, and recyclable;
- Label battery type, weight; give instructions for recycling, removal and installation.

OTHER DESIGN AND MANUFACTURING FACTORS

What's the Problem?

Product design and manufacturing should address air and water pollution and employee health concerns. Besides using toxic substances and "designing-for-disposal," manufacturers often use glues or fasteners that make repair or upgrade impractical. In addition, virgin and non-recyclable materials use up more water, energy, and minerals than recycled materials.

What's the Alternative?

- Demand products and parts designed so they can be disassembled with universally available tools; minimize use of fasteners. Compaq and Dell are experimenting with snap-in, snap-out assembly.
- Require readily recyclable metal casings. Sony uses metal rather than plastic housings in some products, eliminating the need for halogenated flame retardants and increasing recyclability.
- Require recycled-content materials. IBM introduced a PC using 100% recycled plastic in all the plastic parts.
- Use remanufactured and refurbished equipment.
- Choose manufacturers who minimize the toxicity and variety of adhesives, labels, coatings, finishes, fasteners, and metallic paints.
- Require EnergyStar compliance for energy use and sleep modes, active upon delivery and functional within LAN environment. This can save substantially on electricity use and costs, and reduce greenhouse gases related to energy generation. City of Seattle requires EnergyStar PCs. Massachusetts required EnergyStar activated upon delivery for PC's, printers, and video monitors <http://www.energystar.gov>. (Researchers at Delft University in Holland are designing a wind-up laptop, that operates for one hour on 20 seconds of winding.)
- Require and enable duplex printing mode.
- Require electronic or on-line documentation. City of Seattle required no extra copies of manuals or disks.
- Select printers and copiers that use remanufactured toner cartridges, and can print on both sides of paper.
- Consider air quality standards for printers. Environment Canada's standards for desktop printers: ozone concentration must not exceed .04mg/m³; dust concentration must not exceed .24 mg/m³. <http://www.environmentchoice.com>
- The European Computer Manufacturers Association recommends reporting the values for ozone, VOC, and dust in terms of mg/m and/or mg/hour determined in full operation of product; and is drafting a standard.

RESOURCES

If you'd like more information, technical references, contract examples, and web addresses are listed here.

MANUFACTURERS' ENVIRONMENTAL AND PRODUCT INFORMATION; END-OF-LIFE MANAGEMENT OPTIONS (LEASE, TAKE-BACK, ETC.)

IBM: www.ibm.com/ibm/environment/news/epro.html and
www.pcco.ibm.com/www/healthycomputing/envreport/ibm15.html
Hewlett-Packard: www.hp.com/abouthp/environment/contents/design/design_b.htm#Offering
Dell: www.dell.com/us/en/biz/services/asset_005.htm
Compaq: www.compaq.com/services/hardware/hw_disposal.html

THE EUROPEAN UNION'S WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE) DIRECTIVE

The Directive, adopted June of 2000, sets dates by which manufacturers must take back used products to avoid waste and phase out certain toxic materials.

http://europa.eu.int/comm/environment/docum/00347_en.htm

GREEN PURCHASING MODEL CRITERIA AND CONTRACTS

City of Seattle: for desk-tops, EnergyStar compliance, manufacturer takeback of packaging, pre-installed programs and no extra manuals or disks are required. Eliminating individual packaging is being discussed. <http://www.ci.seattle.wa.us/oem/GreenPurchasing/GreenPurchasing.htm>

State of Massachusetts: The State of Massachusetts "Request for Response" (OSD RFR No. ITCO5, April, 1999) for computer equipment required EnergyStar products and rated vendors on a full range of environmental features, including recycled content and recyclability; labeling plastic resins and not welding parts; avoiding toxic substances; upgradability, taking back equipment and packaging for recycling at the end of useful life; and ergonomics and reduced worker exposure to radiation or electromagnetic fields. The State process also recognized independent third party certifications.

<http://www.magnet.state.ma.us/osd/enviro/products/computer.htm>

State of Texas: "Guidelines for Lease vs. Purchase of Information Technologies; Department of Information Resources; Austin, TX; May, 1998. www.dir.star.tx.us/oversight/lvp

THIRD PARTY CERTIFIERS AND RATINGS OF COMPANIES AND/OR PRODUCTS ACCORDING TO ENVIRONMENTAL STANDARDS; LABELS INDICATING COMPLIANCE WITH STANDARDS

Government standards for environmental features with accompanying special labels to indicate which products meet the standards:

EnergyStar ® U.S. EPA energy use standards and lists of manufacturers and products.

<http://www.epa.gov/appdstar/esoc/database/pindex.htm>

Blue Angel (Germany), www.blauer-engel.de/English/index.htm

Nordic Swan (Norway, Finland, Sweden, Denmark, Iceland), <http://www.ecolabel.no/english/about.html>

Euro Eco-Label (European Union), <http://europa.eu.int/comm/environment/ecolabel/index.htm>

Environmental Choice (Canada), www.environmentalchoice.com

Continued



Non-governmental organizations which set environmental standards for various electronics products; some license the use of their labels by interested manufacturers:

Silicon Valley Toxics Coalition (SVTC) Rating of computer manufacturers and other environmental information on electronics. Clean Computer Campaign. <http://www.svtc.org/>

Swedish IT Company Organization (SITO) Eco-Declaration for Personal Computers: SITO permission is required to use the form. <http://www.sito.se/>

TCO, another Swedish-based IT standards-setting organization. <http://www.tco.info.com/>

European Computer Manufacturers Association (ECMA). Technical Report TR-70 addresses environmental attributes in products. www.ecma.ch

DESIGN-FOR-THE-ENVIRONMENT (DfE), DESIGN FOR DISASSEMBLY OR REMANUFACTURING

EPA-DfE projects:

Microelectronics and Computer Technology Corporation (MCC) Printed Wiring Board DfE. <http://www.mcc.com/projects/env/index.htm>

Computer Display Project Contact
<http://www.epa.gov/opptintr/dfe/compdisp/compdisp.html>

EPA WasteWise Project, <http://www.epa.gov/wastewise>

"Eco-Design Checklists for Electronic Manufacturers, System Integrators, and Suppliers of Components and Subassemblies," Tom Clark; The Center for Sustainable Design; Surrey Institute of Art and Design; University College; Surrey, UK. www.cfsd.org.uk

FINANCIAL AND MANAGEMENT ASSESSMENTS OF SUSTAINABLE BUSINESS PRACTICES

These investment funds screen computer companies based on environmental criteria:

Innovest. <http://www.innovestgroup.com>

PAX World Fund, <http://www.paxfund.com/index>

Bank Sarasin, <http://www.sarasin.ch>





**Northwest Product Stewardship Council
Computer Subcommittee**

The NWPS-C is a group of businesses, governments, and non-profits working together to integrate product stewardship into the policy and economic structures of the Pacific Northwest.

Membership is open to individuals and organizations who embrace this mission.

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This Guide is available on-line at: <http://www.govlink.org/nwpsc>
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